comes from the belly wall and not from the viscera. Local anesthesia helps greatly in getting sufficient relaxation under light anesthesia. If we stop the pain with novocain the patient will sleep with gas and morphine almost naturally.

General anesthesia may be further curtailed, especially in dangerously ill patients by infiltrating the abdominal wall and opening the belly under novocain, and then waiting until the patient has been put to sleep before proceeding with intra-abdominal manipulations.

Or anesthesia with gas and novocain may be begun simultaneously. This is especially advantageous in smaller hospitals where delays in draping and scrubbing the patient often prolong the anesthetic quite unnecessarily.

Nerve-blocking alone, paravertebral and splanchnic nerve blocks, are rarely indicated in abdominal operations. Ether and gas do the viscera themselves little or no harm; the delay and limitations of operation under an anesthesia so undependable as the abdominal nerve blocks will more than counterbalance the evils of a general anesthetic. Rarely the lack of facilities for giving gas or unskillful anesthetists may force us to depend upon novocain alone.

Most operations on the bladder, the prostate and the urethra, may be done under local and regional anesthesia. The various forms of sacral injection compete with regional anesthesia; the choice will rest with the skill of the individual operator in one or the other of these methods. The choice between local or sacral anesthesia and gas will often be a matter of personal preference and expediency. Local or sacral anesthesia is perfectly useful and sufficient; the field of bladder and perineal operations is anatomically circumscript; there is rarely need for unforseen exploration or extension of the operation beyond the anesthetized areas. Except for simple operations like cystotomy or urethrotomy, operators having a skilled anesthetist and assistants at their disposal will choose gas or ether as a rule. Operators working single-handed, with limited assistance, will incline to injection methods. The patient will do as well by one way as by the other.

Local anesthesia is a hindrance in major operations on the large bones of the extremities. It is invaluable in operations upon the soft parts where the co-operation of the patient is to be desired. It makes tenoplasties and tendon sutures easier and more accurate, it enables the operator to judge of the effects of his procedure there and then, to change the tension of sutures or their position if the first effect is not all that he desires. It is a help in operations on the peripheral nerves.

In the upper extremity I prefer local infiltration to plexus anesthesia, after which I once had happen a permanent ulnar palsy.

SUMMARY

Regional anesthesia is invaluable in operations where loss of consciousness is harmful. It is most useful in operations on the skull and brain, on the thorax and on the soft parts of the extremities.

When used after preliminary pneumothorax it may replace positive pressure anesthesia in certain thoracic operations.

It is usually unnecessary to use local anesthesia unaided by general in abdominal operations. Used alone it is a hindrance to proper exploration; used with general anesthesia it is an valuable aid.

(135 Stockton Street.)

THE THERAPEUTIC ASPECT OF SHORT WAVE X-RAYS *

By ALBERT SOILAND, M. D., Los Angeles

X-ray therapy in general has been actively before the medical profession for a quarter of a century, and its use and limitations are now fairly well established. This statement, however, is not applicable in a general way to the more recent achievement of short wave therapy by means of extremely high voltage. As the use of this method in the United States is limited to less than two years of clinical work, the time element is as yet not sufficient to draw any definite conclusions. Data on this work, however, is accumulating with increasing volume, and we are now in a position to at least discuss intelligently the problems of deep roentgen therapy.

Let it be clearly understood that this is not a new X-ray. It may be called a refinement process, whereby those rays which energize the skin and superficial structures are eliminated and a wave form of X-ray is produced, which delivers its energy to tissues heretofore inaccessible to earlier methods. In other words, we have now available a large amount, if it may be so termed, of deeply penetrating short wave X-rays.

To produce such rays requires an exciting voltage of two hundred thousand. It is also necessary to use specially constructed vacuum tubes to transform this voltage into direct X-ray energy. Next must be considered the electrical requirements which enter into the successful operation of a plant of such proportions, a problem which taxes the engineering skill of the artisan, for here is no plaything which any individual can handle with impunity. The dangers are grave, both from an electrical standpoint, as well as from the X-ray product, the consequences of which, if not directed with intelligence and care, are terrible to contemplate. The discussion of this part, however, may be well left to the specialist who is concerned with the operation of these rays, and will, therefore, not be further dilated upon here.

The first reports of short wave X-ray results came from abroad, accompanied by such enthusiastic accounts that radiologists in America were led to believe that they might as well discard their old equipment, procure the new, and at once reap the benefits of this highly promising form of treatment. The American radiologist is, as a rule, a fairly level-headed individual, and is unwilling to discard a time-tried method before he has had ample opportunity to try out a new. He hoped that the short wave X-ray would accomplish all that was claimed for it, and is now desirous of submitting his observations to you for your own good judgment.

*Presented to the Southern California Medical Association, April, 1923.

The clinical conditions which seem to offer the best field for deep therapy are primarily those which have yielded poor results to other known methods. Upon malignant conditions in general, the deep X-ray has made its greatest mark, and while in no sense a curative agent in conditions which are ostensibly incurable, some of the results achieved in these have been so startling as to lead us on in the hope that with further experience and more refinement of technique, many actual cures might be obtained. Those of us who have seen the immediate effect upon large inoperable tumors, both malignant and benign, have marveled at the clinical changes, and while most of these have been of more or less temporary benefit only, the occasional one which shows permanent relief buoys us up in the hope that we may eventually increase this number to a higher degree.

To cure a cancer necessitates the destruction of every aberrant cell involved, and to accomplish this is the end toward which we are aiming. The problem, therefore, of making use of deep therapy is to seek out and destroy these cells with the least possible amount of disturbance to the normal structures or to the host in general. Whenever it is possible to execute this mandate, a cure will result. To do this successfully requires not alone a diagnostic acumen, but a well-founded knowledge of the essentials of radiation therapy. It is obviously impossible to effect a cure in any condition where cancer has become generalized. This accounts for the general failure to cure by any means at our present command a metastasized tumor, using this term in its broad sense. A tumor which has grown by extension and not metastasized beyond the lymph glands in the immediate neighborhood may, by the judicious and adequate use of short wave X-rays, be permanently cured, but if one single cell escapes from the field in question, the cure is futile. This, therefore, is the great unknown quantity. There is at present no assurance that we can deduce by any form of reasoning or investigation that a tumor is localized or circumscribed to a given field. When a tumor is curable, it is manifestly curable to any agent which removes or destroys its activity. It may be successfully attacked by surgery, which in this instance will be be considered to include removal by knife, by the actual cautery, by thermal coagulation, or by any chemical agent which destroys it in toto. Such a tumor is also curable by radiation. Which of these methods is to be preferred will depend entirely upon the location of the growth and upon the patient's physical condition. A great many may be successfully mastered by the surgery alluded to, and may be with equal certainty conquered by radiation. The selection of the preferable method should in every case be left to the decision of the skilled clinician.

A great deal has been written upon the effects of the deep X-ray. This varies naturally with the amount used and the condition of the patient. Up to the present time, the skin, which was formerly our greatest source of danger with the lower voltages, seems to have suffered very little from the short wave, but new dangers have appeared and various constitutional disturbances result from large amounts of the latter. These disturbances are nausea, prostration, a disturbed blood picture, fibrous tissue changes in internal organs, and inflammatory or ulcerative changes in the intestines. These, however, are happily becoming more rare with an increasing refinement of technique. In regard to the nausea, that which is produced by bad air and other electrical disturbances within the X-ray operating room is of very transient nature, but that which comes as a direct result of X-ray action upon the enteric mucosa is distressing. It may last a week or more, following an intensive course of deep radiation. Patients vary greatly in their susceptibility to this. There are some who do not become nauseated when subjected to a most intensive course of radiation. The blood changes and anemia are due to a perverse biologic action upon the lymphocytes, which are very susceptible. The red cells are more resistant, but even they would probably succumb to prolonged intensive radiation. Prolonged action upon any of the abdominal organs sets up destructive changes in the intestinal canal, acting primarily upon the intestinal flora, where coagulation and localized necrosis may occur in susceptible fields. This is followed by a production of tox albumins, the absorption of which may be attended by a distressing clinical picture, accompanied by colitis, bloody stools, and a general physical depression. Recovery is usually prompt upon cessation of the radiation. This clinical picture, however, is obtained only when attacking an extensive abdominal malignancy, where the results are at least equal with those of surgery, and as the radiative sequellae do not measure up in intensity with those of surgical shock, the end comparison is obvious.

The writer has been making use of this deep X-ray therapy for a little over a year. During this time he has subjected a great many patients, with various suitable lesions, to an intensive course of deep therapy, making serviceable all the factors which enter into the approved methods of application. He feels that, while a great advance has been made and that results heretofore impossible to obtain have accompanied this new method, yet not sufficient time has elapsed to properly placard results with mechanical precision. It appears that with the short waves a greater range of clinical conditions can be encompassed, but that in our attack upon gross pathology we still have to reckon with every therapeutic agent which has heretofore been given us. That in this attack, the new short wave X-ray is the most formidable weapon so far produced, can now be considered an undisputed fact.

The present development of radiation as applied to treating the sick makes it imperative that the medical man guard this with the utmost rigor, to keep it from becoming the property of the charlatan, who is already encroaching upon the traditional rights of our profession. It is high time that the general practitioner of medicine and surgery sever all connection with the lay radiographer and the commercial laboratory, and jealously guard this potent force from becoming common property. Too much can scarcely be said about the dangers associated with high voltage X-ray work, the knowledge and prevention of which tax

the skill and ingenuity of the highly trained physician and electrical engineer. The medical profession as a whole is aware of this fact, and also that a political layman placed before the last California State Legislature a bill to permit other laymen to take this dangerous agent and use it upon an innocent public under restrictions which are pitifully inadequate, both as to the qualifications of those who may use this agent and as to the limitations placed upon its use. That such an act should be permissible in this enlightened age is merely another instance of the commercial greed of the medical parasites who, with the aid of politicians, are continuously undermining the standards of scientific medicine and surgery, and flooding the country with a host of undesirables, perhaps more threatening to our civilization than the Red Bolshevists of Russia.

Note by Author—Bill referred to passed Assembly and State Senate about six weeks after the presentation of above article. When it reached the Governor's desk for his signature, a flood of protests from some of the members of the California medical profession caused him to withhold his signature and thereby nullified the act. In the last meeting of the American Medical Association, a resolution was adopted by the House of Delegates, recommending that radiology be considered an integral part of the practice of medicine and surgery.

(1407 South Hope Street.)

Health as a Means and Not an End—The trouble with these groups who follow the teachings of faddists and special cults is that health is thought of as freedom from disease, as an end. This view is quite commonly expressed, and in these days of great interest in the health movement it constitutes a real danger. It may be stated categorically that health should never be sought as an end, except perhaps by the individual sick in bed. To be conscious of bodily processes, to think too much about one's self, is not only undesirable socially, but also is distinctly unwholesome for the individual. No person may with impunity be too greatly concerned about his health; for, the moment he does, he runs the risk of losing it.

The health motive must be made secondary to objective interests and achievements. As educators it is important that we sense this relationship and guide the program of teaching toward goals of service rather than toward those of personal achievement. Health is to be viewed therefore only as a means for the accomplishment of worth-while things for the world. "Health for health's sake" is not an acceptable slogan. The poseur and the dilettante in health are no more acceptable than the poseur and dilettante in art. That splendid specimen of man power, that wonderful organization of vitality in the healthy woman—are such sufficient unto themselves? Surely no educational theory would seek to justify the development of mental power for its own sake; likewise it will find impossible the plea of those who seek health for health's sake. Rather will it defend the view that health is only of value, only of significance, as it is used in socially desirable ways. The social consciousness of our day asks that we act as trustees of life, enriching it where we may, but always conserving it for worthy ends, ready to spend it all if the demand be great enough. . . .

Health as freedom from disease is a standard of mediocrity. Health as a quality of life is a standard of inspiration and increasing achievement. The hope may be expressed that the great interest in health education today shall be directed toward not only scientifically acceptable goals, but also goals that shall be worthy.—(Jesse Feiring Williams, Hygeia, September, 1923.)

HEART FAILURE: ITS UNDERLYING CAUSES, CLINICAL MANIFESTATIONS AND TREATMENT*

By WILLIAM J. KERR, M. D., San Francisco
(From the Medical Division, University of California Hospital.)

The increasing death rate from cardiovascular disease is attracting widespread attention. As the expectancy of life rises, we see more individuals reaching the age when certain vascular and myocardial disorders are prone to occur. We are constantly seeking the underlying causes of these maladies which we are called upon to treat, keeping in mind the idea of prevention. These causes probably often lie hidden in the earlier period of life associated with infections, intoxications, nutritional disorders, congenital malformations, hereditary, and other obscure factors. Medicine of the future will probably deal more with the prevention of such of these as are preventable when the methods by which they are produced are more fully understood. The role of the clinician in the treatment of end results of disease is too often unsatisfactory and much like the patch-work of the cobbler. This is probably more applicable to cardiovascular disease than of any other group.

With the increasing morbidity and mortality from cardiovascular disease, we would have a clearer conception of heart failure, its predisposing causes, clinical manifestations, and treatment. Unfortunately, the only notion many physicians have of heart failure is conveyed to them by heart murmurs or irregularities. They neglect the most important factor in estimating the efficiency of the circulation; namely, the efficiency of the heart muscle itself. The back-pressure theory has done much harm by directing attention away from the physiological functions of the heart muscle. MacKenzie's conception of a "rest force, which is employed to maintain an efficient circulation when the body is at rest, and a "reserve force," which is called into action when effort is made, is more readily acceptable. The "reserve force" is the first to suffer and, if the damage is extensive enough, the "rest force" is impaired and the body even at rest shows evidence of inefficiency resulting in dropsy, dyspnoea, and a multitude of other signs which may be included in the wide sense under the term "heart failure." MacKenzie's definition of heart failure is a broad one—"Heart failure may be defined as the condition in which the heart is unable to maintain an efficient circulation when called upon to meet the efforts to the daily life of the individual."

THE UNDERLYING CAUSES OF HEART FAILURE

When we seek to correlate the pathological changes in heart failure with the clinical manifestations, there is great variation and confusion. Our findings are in no better accord than are the pathological changes, clinical symptoms, and signs and functional studies in renal disease. The parallel serves to point out the importance of recognizing functional efficiency rather than structural changes

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